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THE INSECT PEST SURVEY BULLETIN

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OUTSTANDING ENTOMOLOGICAL FEATURES FOR MAY, 1922.

The Hessian fly situation as a whole is most encouraging. Reports from Indiana, Illinois, Missouri, and California indicate that practically no damage will be done. Central Tennessee alone seems to be seriously infested.

The chinch bug is becoming more threateningly numerous throughout the East-Central States, and is again appearing in the North-Central States. The first authentic specimens that have been taken in 10 years are reported from Minnesota, and the pest is again appearing in southeastern Nebraska.

The pale western cutworm promises as serious an infestation throughout its North Dakota and Montana range as occurred last year.

The heavy floods in the Ohio and Mississippi River Valleys have developed an ecological condition favorable to the abnormal increase of certain lepidopterous larvae. Indiana reports that the black cutworm is feared in the overflowed Wabash River Valley, and Louisiana reports that the ^{pale} army worm has already appeared very serious in overflowed regions in that State.

An unconfirmed report of an outbreak of the true army worm in upper Pennsylvania has been received.

Throughout the Middle Atlantic States and as far west as Indiana reports are being received of an unusual abundance of the brassy flea-beetle.

The clover leaf weevil is not as serious as was anticipated early in the spring. This insect is being controlled over part of its range by the common fungous disease Entomophthora sphaerosperma Fres. It is much more abundant than usual, however, over the eastern half of Kansas.

The various fruit aphids are not as severely abundant as usual over the greater part of the apple-growing sections of the eastern United States. In the New England and Middle Atlantic States the late frosts checked these insects with the possible exception of the rosy apple aphid. In the Mississippi River Valley, however, very severe outbreaks are reported from Minnesota, Iowa, and Arkansas.

Tent caterpillars are reported throughout the New England and Middle Atlantic States as unusually abundant.

The apparent increase of the San Jose Scale over much of the eastern United States, reported last year, is being confirmed by reports received this month.

Pears and plums are being seriously damaged in Oregon and California by the pear thrips.

The blackhead cranberry worm is appearing so numerous in the central counties of Wisconsin that control flooding is being practised.

Hopperburn of a typical nature associated with the potato leafhopper is reported from Louisiana, this being much south of the general range of this trouble.

About 3 years ago specimens of a small nitidulid were sent to the National Museum from Youngstown, N. Y., for determination. These proved to be the European Heterostomus pulicarius L., a species apparently of but little economic importance in Europe, where it is recorded as feeding on the pollen of Linaria. In 1920 Mr. H. Notman described what Mr. Schwarz considers as this species under the name of H. mordelloides, from Schoharie, New York. In 1921, Mr. H. Morrison collected specimens of this same beetle in Arnold Arboretum at Boston. In this number of the Bulletin is a report by Dr. E. P. Felt that this insect is seriously damaging strawberries in Columbia County, and is distributed over Saratoga, Albany, Niagara, and Schoharie Counties, New York. The damage is done by the adult beetles feeding at the base of young blossoms and producing "nubbins" or entirely destroying the fruit.

An infestation of approximately 1,000 acres of peas in the San Joaquin Valley in California by the pea aphid was reported early this month. At that time the infestation was not serious.

Reports from the greater part of the cotton belt indicate that there is an unusually large number of boll weevils on small cotton for this time of the year, and on May 24 weevils were more numerous in the vicinity of Tallulah, La., than in any previous year of which records are available.

Turkey gnats are unusually abundant in parts of Nebraska and Missouri where they are so seriously attacking poultry that chickens and even mature fowls are being killed.

One of the most interesting developments of the month has been the determination of a beetle, collected in a Connecticut nursery during the past two years, as Anomala orientalis Waterh., the anomala which occasioned so much concern in Hawaii about 10 years ago. The insect is a native of Japan and was probably introduced into Hawaii before 1908 in soil on the roots of imported plants from Japan. In 1908, Dr. Lyon, then working with the Hawaiian Sugar Planters Association observed large numbers of these larvae at the base of cane plants but mistook them for the Japanese beetle of Hawaii (Adoretus tenuimaculatus Waterh.). In 1912 Dr. A. Spear, in studying the fungous diseases of insects affecting sugar cane in Hawaii, collected a number of these larvae and turned them over to Mr. F. Muir, who recognized them as a species new to the Islands. In June of that year Mr. Muir visited the infested fields and collected adults. The pest, though infesting but a small area, was extremely destructive, and the Hawaiian Sugar Planters Association detailed a specialist to proceed to the Orient and obtain parasites for the control of this pest. This work was so successful that one of the parasites (Scolia manilae Ashm.) was established between the years of 1914 and 1916, and by 1919 it had so thoroughly controlled this pest that from an area where, in 1917, 3,500 anomala grubs were collected only 4 grubs were found by most diligent search. The parasite has extended its range beyond the area infested by the anomala and is now infesting the Japanese beetle of Hawaii. That the anomala is established in Connecticut seems evident, as specimens have been collected in the same nursery two successive years.

CEREAL AND FORAGE-CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

- Indiana J. J. Davis (Insect Notes No. 10, May 17). "The Hessian fly will do very little injury this spring in Indiana."
- Illinois W. P. Flint (May 18). "Heavy rains at time of emergence of the adults have reduced the spring brood so that practically no damage will occur this season."
- Missouri A. C. Burrill (May 4). "Much less abundant this year than usual. September brood has not yet emerged; other broods evidently perished."
- Tennessee G. G. Ainslie (May 15). "In central Tennessee (Maury County) the spring brood of the Hessian fly had about half pupated during the last week in April. A few days later the larvae were reversing themselves in the puparia and since then some flies have emerged. The infestation throughout central Tennessee is unusually heavy for the spring generation. Examination of samples by Mr. Larrimer show 23 per cent of culms and 93 per cent of the plants infested. A secondary or supplementary spring brood of the fly in this section seems certain."
- California C. M. Packard (May 1). "The Hessian fly is not injuring wheat as seriously as usual in the Montezuma Hills wheat-growing section this year. This seems to be due to cold windy weather in March and early April when flies were emerging from the stubble, and excessive moisture has enabled wheat to outgrow fly injury."

GRASSHOPPERS (Acridiidae)

- Wisconsin S. B. Flacker (May 23). "First and second instar nymphs are appearing in the northeastern part of this State, east of a line extending from Iron to Portage Counties and north of Waushara and Door Counties."

MARCH FLIES (Bibio spp.)

- Idaho R. A. Muttkowski (May 12). "During the past two weeks reports have been received (with specimens) of serious damage to winter wheat. The fly Bibio Hirtus was reared from this material. This fly is exceedingly abundant in Latah County every year, but this is the first time that any specific damage has been attributed to it. The pest is reported as feeding on the roots of wheat plants."

WESTERN WHEAT-STEM MAGGOT (Pegomya cerealis Gill.)

Nebraska M. H. Swenk (May 15). "Early in May the wheat fields in Scottsbluff County developed an infestation of the western wheat-stem maggot. The maggots were full grown and preparing to pupate on May 9. This infestation coincides seasonally with the infestation that was found in Colorado in 1903, at the time of the original discovery of this pest, and is considerably later than the infestation that occurred last year in Morrill County in this State, when the adult flies emerged early in May. It seems possible, therefore, that this pest has three generations in the wheat before harvest: The first in the middle of April, the second in the middle of May, and the third in the latter part of June and in early July."

CHINCH BUG (Blissus leucopterus Say)

Ohio T. H. Parks (May 20). "Greater damage is anticipated from chinch bugs in the northwestern quarter of Ohio than for several years. Bugs were flying in considerable numbers early in May."

Indiana J. J. Davis (May 15). "As anticipated, the chinch bug is showing up in many sections of the State. Reports of rather heavy infestations of adult bugs in grain fields have already been received. There was no conspicuous flight of chinch bugs at LaFayette previous to May 1, on which date we observed a considerable flight, and on the following Thursday (May 4) there was a very heavy flight of bugs which seems to have been rather general and widespread."

Illinois W. P. Flint (May 18). "Adults more abundant than last year in most counties in central Illinois and slightly to moderately more abundant in southern Illinois. Damage will occur over at least two-thirds of the State. Eggs just being deposited; no young bugs reported even in extreme southern part of State."

Minnesota A. G. Ruggles (May 17). "Of the cereal insects probably the most important is a kind of chinch bugs. These were taken in the northern part of the State the first of the month and are the first authentic specimens we have taken in Minnesota for 10 years."

Nebraska M. H. Swenk (May 15). "The chinch bug was noted as active in the wheat fields of Thayer County on April 12."

Missouri A. C. Burrill (May 3). "Heavy infestation in immediate vicinity of straw-stack in Bates County. Bugs dispersing on foot in all directions; no flight." (May 5). "General mating earlier than last year in Carroll and Bates Counties." (May 25). "To date we have reports of chinch bug abundance from Callaway, Monroe, Montgomery, Schuyler, Bates, and St. Clair Counties."

GREEN BUG (Toxoptera graminum Rond.)

Texas E. E. Russell (May 8). "Several fields in Floyd and Foard Counties were found to be quite severely injured by the green bug. One field consisting of 200 acres in Floyd County was a total loss. This particular infestation is supposed to have started from volunteer grain near a strawstack on the premises. These local outbreaks are the only records of injury which have reached us from northern Texas this year, and damage has ceased owing to control of pest by its natural enemies."

JOINTWORM (Harmolita tritici Fitch)

Illinois W. P. Flint (May 18). "Ovipositing in large numbers through central Illinois during week of May 8, particularly abundant in western Illinois."

ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

Montana W. C. Cook (May 5). "Army cutworms quite abundant. About half grown at Fresno, Kremlin, and Laredo. Much later than usual in appearance, no evidence of migration as yet."

PALE WESTERN CUTWORM (Porosagrotis orthogonia Morr.)

North

Dakota R. L. Webster (May 12). "This insect is appearing fully as bad as last year. The infestation seems to be most severe in Golden Valley County, although injury extends eastward and southward. A tachinid parasite was noticed in numbers."

Montana W. C. Cook (May 5). "This insect appeared for the first time this season near Laredo." (May 15). "At the northern Montana substation, these larvae are apparently as abundant as last year, though somewhat smaller than they were at this time in 1921."

BLACK CUTWORM (Agrotis ypsilon Rott.)

Indiana J. J. Davis (May 15). "The overflow worm, so called because it follows the late overflows of the Wabash River and its tributaries in southwestern Indiana, is likely to be very abundant this spring, and probably more destructive than in previous years, because of a larger acreage in corn. Twenty thousand acres of wheat was destroyed by water overflow in Gibson County which will probably be planted to corn, making a total of 60,000 acres in this one county which is subject to overflow worm attack. This same species seems to follow late overflows wherever they occur."

FALL ARMY WORM (Laphygma frugiperda S. & A.)

Louisiana T. H. Jones (May 17). "Because of the large amount of territory overflowed in this State, a number of requests have already been received for information on preventive measures against grass worms. Injury by grass worms (usually Laphygma frugiperda) is common to plants planted on overflow land."

LESSER MIGRATORY GRASSHOPPER (Melanoplus atlantis Riley)

Montana A. L. Strand (May 19). "The eggs of this grasshopper are reported to be hatching in Yellowstone County."

UPLAND CORN WIREWORM (Melanotus pilosus Blatch.)

Nebraska M. H. Swenk (May 15). "The upland corn wireworm was found eating off the roots of wheat and barley and killing out large patches in the field in Adams County on May 8. Wireworms, presumably of the same species, were responsible for the killing out of the young alfalfa sown in Clay County fields last fall and resown this spring. The spring sowing had been practically destroyed by May 9."

GREAT PLAINS FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (May 15). "In addition to the losses of wheat in Deuel County due to injuries by the Great Plains false wireworm, reported last month, similar injuries have since developed in Scottsbluff County. In one 160-acre field of winter wheat about 70 acres had been destroyed by May 4."

CORN

ARMY WORM (Cirphis unipuncta Haw.)

New York C. R. Crosby (April 26). "First adults of the season collected at trap lantern on this date."

Pennsylvania W. R. Walton (May 26). "County agent located at Erie, Pa., reports, under date of May 24, the presence of a local outbreak of the true army worm. We are endeavoring to confirm this report by sending one of our corn borer men to Erie."

WEBWORMS

Tennessee G. G. Ainslie (May 15). "Larvae of Crambus mutabilis Clem. have been taken in considerable numbers from corn on new and sod land. This is the only species that has been found attacking corn thus far this year. Moths of the following species were first observed on the dates given: Crambus praefectellus Zinck., April 15; C. laqueatellus Clem., May 3, C. mutabilis, May 12; all observations at or near Knoxville. Larvae of the burrowing webworms of at least two species, probably Acrolophus poeanellus Clem. and A. arcanellus Clem., have been found around Knoxville. A young corn plant attacked by either is usually completely consumed. The burrowing webworms can usually be distinguished from the crambid larvae by their burrows being open, while the latter close their burrows at the surface of the ground with a valve."

FLEA-BEETLES (Halticinae)

- Maryland E. N. Cory (May 13). "Chaetocnema pulicaria Melsh. is doing serious damage to corn in Montgomery and Hartford Counties."
- Indiana J. J. Davis (May 15). "A small black flea-beetle (species not determined) was damaging sweet corn near Terre Haute on May 9, and apparently it had been attacking the plants for several days before they were observed. The injury was quite serious and general in that section."
- Tennessee G. G. Ainslie (May 15). "Corn planting has been delayed over the whole eastern half of the State by the continued rainfall. In some early planted fields on new or sod land near Knoxville flea-beetles (Chaetocnema pulicaria) were found so abundant that some plants had evidently been killed by them. There were often 30 of the beetles on a plant with but two or three leaves."
- Missouri A. C. Burrill (May 24). "Corn seriously damaged in Marion, and Ralls Counties. Farmers fear flea-beetles will be worse than chinch bugs."
- Arizona Correction: In the last number of the Survey Bulletin the note on Phyllotreta pusilla Horn, page 38, should have been under Chaetocnema ectypa Horn.

CLOVER

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

- Indiana J. J. Davis (April 15). "Reported as injuring clover in southern Indiana within the past week." (May 15). "Not as many reports were received as anticipated, which was probably due to the fact that in the low areas they were destroyed by the overflow and in other sections of the State clover made such a heavy growth that the injury was not noticeable, even where the weevil larvae were present."
- Iowa Fred D. Butcher (May 17). "The clover-leaf weevil has appeared in practically the same areas as reported last year; only occasional fields are seriously damaged at this time. A fungus is attacking the weevil and is controlling it very successfully, especially in the southeastern part of the State. In the south-central part the disease is present in nearly all fields, but not sufficiently epidemic to control the weevil."
- Missouri A. C. Burrill (May 11). "This insect is less abundant than usual, probably due to fungous disease; in fact, damage has practically ceased."

- Illinois S. C. Chandler (April 27). "At the start of the season considerable feeding was done and severe injury anticipated. The fungous disease of this insect was becoming prevalent during the week ending April 29, and clover is now recovering with no prospect of further injury. The first pupa was observed by myself and Mr. B. W. Cartwright on April 24 at Centralia. The first adult was observed April 26 at Fairfield."
- Kansas E. G. Kelly (May 6). "This insect is much more abundant than in previous years. The larvae are now from one-half to two-thirds grown. It is quite generally distributed over the eastern half of the State."

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

- Ohio T. H. Parks (May 20). "This insect continues to be the worst pest of red clover in western Ohio. Larvae have been hatching since May 1. The clover promises to make a good tonnage with the usual number of insects present. The area of serious infestation has been extended southward across the State and now includes the area about Columbus and Marion."
- Illinois W. P. Flint (May 18). "Weevils left hibernation very late. They are not as abundant in fields as during the season of 1921. Very small larvae and eggs were observed on this date."

CLOVER MITE (Bryobia praetiosa Koch)

- Oregon A. L. Lovett (May 9). "This mite was observed for the first time in this locality. Small heavily infested areas were found in the college experimental plats. Weather has been cold and rainy up to within the past few days."

FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeGeer)

- Massachusetts A. I. Bourne (May 12). "This insect is much less numerous than usual, probably due to very cold weather from April 20 to April 22."
- New York C. R. Crosby and assistants. "Late in April this species was in conspicuous numbers in Niagara, Monroe, and Wyoming Counties. The very cold weather, however, seems to have materially reduced their number, as they were reported during the first half of May as very scarce throughout the greater part of the State."
- Pennsylvania S. W. Frost (May 13). "This species was not as prevalent as the other species of aphids on apples this year."
- Iowa F. D. Butcher (May 17). "The green apple aphid is still causing damage in counties in which no efforts were made to control it. Orchards in Madison County show the aphid present in large numbers. No general migration to oats up to this date."
- Arkansas Dwight Isely (May 22). "Much more abundant than usual and generally distributed in nearly all orchards in the northwestern corner of the State. This is the first outbreak occurring in this region since 1918 and has been quite severe, considerably checking the growth of young trees."

APPLE-GRAIN APHID (Rhopalosiphum prunifoliae Fitch)

- Pennsylvania S. W. Frost (May 13). "This species has been very abundant this spring."
- New York C. R. Crosby and assistants. "These insects were quite abundant during the third week in April but heavy freezes have reduced them to a negligible factor."
- Illinois C. P. Compton (April). "Apple trees are generally infested with aphids in the northern part of the State. In some sections the infestation is heavy."
- Wisconsin S. B. Fracker (May 20). "This insect was present in large numbers throughout the State as the buds were opening. It has been practically eradicated by Syrphidae and Coccinellidae."

- Minnesota A. G. Ruggles (May 17). "Late in April many green apple aphids were found on apples around Lake Minnetonka. They had just hatched and were very numerous."
- Missouri A. C. Burrill (May 11). "Earlier in the season these insects were much more numerous than usual in Chariton County. Heavy rains are said to have cleaned them up."
- Kansas E. G. Kelly (May 6). "This insect began to appear in considerable numbers by April 2. Spraying with nicotine sulphate has not been very effective."
- Arkansas Dwight Isley (April 29). "There has been an outbreak of the green apple aphid and the European grain aphid over the fruit regions of northwestern Arkansas. The injury is not severe but the insects are, apparently, present in practically all orchards. This is the first aphid outbreak on apples since I came to Arkansas in the spring of 1918."

ROSY APPLE APHID (Anuraphis roseus Baker)

- Connecticut W. E. Britton (May 23). "This insect was observed as causing some curling of leaves at Mt. Carmel. Syrphid larvae are present."
- New York C. R. Crosby and assistants. "During the last week in April hatching was quite general over the fruit growing sections of New York. This aphid seems to have resisted freezing weather fairly well and during the first half of May considerable leaf curling was observed."
- Pennsylvania S. W. Frost (May 13). "During the first part of April counts of the three species of aphid on apple showed a very small percentage of the rosy apple aphid. Since that time this insect has increased in numbers and orchards in Adams County, where nicotine was not used in delayed-dormant spray, show bad infestation of this aphid. A higher percentage is evident this year than has been noticed for five years."
- Maryland J. A. Hyslop (May 20). "The rosy apple aphid is much more numerous in the southern part of Montgomery County than last year. Considerable curling of leaves is now evident in some unsprayed orchards."
- Delaware J. F. Adams (May). "Serious injury by this species is reported from several localities."

CODLING MOTH (*Carpocapsa pomonella* L.)

- New York C. R. Crosby and assistants. "Mr. G. E. Smith reports that in Orleans County very little pupation had taken place up to May 2. Of 33 specimens collected in one orchard, 32 were larvae and but one a pupa. By May 13 not over 12 per cent had pupated and by May 16 the larvae were still very numerous and comparatively few had pupated. Mr. F. D. Rupert makes a very similar report from Wayne County."
- Indiana J. J. Davis. "The first emergence of the codling moth was observed on May 3 at Clayton and at LaFayette on May 9. There are no special indications of an unusual abundance of this insect."
- Illinois W. P. Flint (May 18). "Emergence of adults started in southern Illinois on May 1; in north-central Illinois, on May 14. But few worms are to be found in orchards on this date."
- Arkansas Dwight Isely (April 29). "First record of emergence at Fayetteville on April 20."
- Washington E. J. Newcomer (May 15). "The minimum winter temperature has ranged from 8 to 10 degrees below zero, resulting in about 4 per cent winter kill. No moths are flying up to this date."

CLIMBING CUTWORMS (Species not determined)

- Washington E. J. Newcomer (May 15). "Probably two or three hundred acres in the Yakima Valley have been protected by putting a band of axle grease around the trunk of each tree. This was done by the growers against the advice of horticulturists who feared injury to the trees from the grease. A few growers used cotton bands with success. These climbing cutworms are much more abundant than usual."

FRUIT-TREE LEAF-ROLLER (*Cacoecia argyrospila* Walk.)

- New York C. R. Crosby and assistants. "This insect is appearing in considerable numbers in Orleans, Monroe, and Chautauqua Counties. They are comparatively scarce throughout the remainder of the fruit section. Approximately two-thirds of the eggs had hatched by May 6 in Niagara County, according to Mr. L. F. Strickland, while egg hatching had just started in Orleans County on May 8."

Oregon D. B. Fulton (April 25). "This insect is decidedly on the decrease and is no longer a serious pest in the LaGrande region. Spraying with miscible oil has been practised in this region for the past four years."

LEAF CRUMPLER (Mineola indigenella Zell.)

South
Dakota H. C. Severin (April 25). "This insect is quite a general pest on apples this year."

CIGAR CASE-BEARER (Coleophora fletcherella Fern.)

New York C. R. Crosby and assistants. "This insect is reported as numerous from Orleans, Wayne, Nassau, and Monroe Counties and present in moderate numbers in Genesee, Ulster, Seneca, Onondaga, and Chautauqua Counties. Very few are to be found in well sprayed orchards."

Missouri A. C. Burrill (May 12). "So numerous in parts of Chariton County that they are girdling large twigs."

BUD MOTH (Tmetocara ocellana Schiff.)

Massachusetts H. T. Fernald (April 19). "Mr. H. A. Mostrom, of the Essex County Agricultural School, reports that this insect is very steadily increasing and is now prevalent enough to be considered as a general pest in Essex County."

Connecticut M. P. Zappe (May 24). "This insect is noticeably less abundant about Milford than it was last year."

New York C. R. Crosby and assistants report this insect as very numerous in Nassau County and on the increase in Onondaga, Orleans, Genesee, and Wayne Counties and that a few were reported from Monroe, Columbia, Niagara, Ulster, Seneca, and Rockland Counties."

Oregon A. L. Lovett (May 10). "This insect is much above the average in abundance and injury this year. The damage is usually confined to stone fruits, but this year all fruits show heavy infestation."

GREEN FRUITWORM (Xylina antennata Walk.)

New York C. E. Crosby and assistants report this insect as quite abundant in Wayne and Chautauqua Counties about the middle of May.

Pennsylvania S. W. Frost (May 13). "Larvae rather abundant this spring. They were easily killed with lime-nicotine dust, Niagara D-11."

TENT CATERPILLAR (Malacosoma americana Fab.)

- Massachusetts H. T. Fernald. "Tent caterpillars seem to be very much more abundant than last year. In Essex County hatching started about April 10 and nests were pretty well filled by May 10. They were also reported as seriously abundant in Lincoln and Worcester Counties. The present outbreak seems to be the worst that has occurred in this State in years."
- Connecticut D. A. Porter (May 24). "This insect is much more abundant than last year and is, apparently on the increase in the vicinity of Wallingford. Many of the nests have been deserted and the spinning of cocoons is just beginning."
- New York C. R. Crosby and assistants. "Tent caterpillars have appeared in considerable numbers in Dutchess, Orange, Rockland, Ulster, and Wayne Counties. In Wayne County the nests are increasingly noticeable, especially where poor spraying has been carried on."
- New Jersey H. B. Weiss (May 16). "This insect is four or five times as numerous as during normal years. A general outbreak is occurring over the entire State. Mr. F. L. Rook reports that 90 per cent of all the wild cherry trees are more or less defoliated in the southern part of the State."
- Delaware C. O. Houghton (May 10). "This species is more abundant than usual this year. Caterpillars are now migrating, preparing for spinning up. The accumulated excess temperature at Newark is approximately 350 degrees."
- Maryland A. L. Quaintance (May 25). "This insect seems to be unusually abundant in the environs of Washington, D. C., on wild cherry, apple, etc."
- . . . FOREST TENT CATERPILLAR (Malacosoma disstria Huebn.)
- Minnesota A. G. Ruggles (May 17). "Numerous reports have come in concerning the forest tent caterpillar."
- . . .
- North Dakota R. L. Webster (May 18). "This insect is more abundant than usual. Young larvae causing damage to the foliage of apple and plum."

Oregon A. L. Lovett (May 17). "Malacosoma pluvialis Dyar, is excessively abundant in southern Oregon and decidedly more numerous than it has been since 1912 in the Willamette Valley. It is not uncommon to observe in the prune orchards of the Willamette Valley an average of five tents to the tree. The tents are also conspicuous on wild roses along highways and fence rows."

SPRING CANKERWORM (Paleacrita vernata Peck)

New York C. R. Crosby and assistants. "This insect is plentiful in the regions infested last year. Eggs started hatching about May 6 in Orleans County and had practically all hatched by May 12 in Niagara County. They are also reported from Wayne and Orleans Counties."

Delaware J. F. Adams (April 30). "Larvae observed attacking apple at Milford on this date."

Iowa F. D. Butcher (May 17). "Cankerworms in Wapello, Henry, Jefferson, and Lee Counties are causing a good deal of damage, especially in young orchards which were not sprayed. Owing to frequent rains in Lee County, a few of the orchards which were well sprayed are still being attacked."

Minnesota A. G. Ruggles (May 17). "Cankerworms, both spring and fall species, are very numerous with us at this time."

Missouri A. C. Burrill (May 12). "Much less numerous than last year in Chariton County."

FALL CANKERWORM (Alsophila pomataria Harris)

Connecticut D. A. Porter (May 2). "First hatching of eggs observed at Wallingford on this date."

B. H. Walden (May 20). "Locally abundant in New Haven County and injury showing up in some orchards which were not sprayed."

New York C. R. Crosby and assistants. "Adults were first observed at trap lantern on April 10 at Ithaca. Female moth was observed laying eggs at Syracuse on April 19. A few larvae on May 10 in Wayne County."

Minnesota A. G. Ruggles (May 17). "Cankerworms, both fall and spring species, are very numerous with us at this time."

TARNISHED PLANT-BUG (Lygus pratensis L.)

- Pennsylvania S. W. Frost (May 13). "Very abundant in apple orchards in Adams County."
- Indiana J. J. Davis (May 15). "What we believe to be the tarnished plant-bug was reported as killing apple buds at Greenfield on April 19. Specimens were not furnished, but the description and character of the injury agreed very well for the tarnished plant-bug."

FALSE APPLE RED BUG (Lygidea mendax Reut.)

- Connecticut D. A. Porter (May 3). "First hatching of eggs observed on this date, both in insectary and in field at Wallingford."
- New York C. R. Crosby and assistants. "Second-stage nymphs were predominating on May 13 in Green County, while eggs were just hatching on this date in Onondaga County."
- Pennsylvania S. W. Frost (May 13). "Nymphs of this species are numerous this spring. The foliage shows an abundance of spotting by this insect."

BLACK APPLE LEAFHOPPER (Idiocerus flavidorsum
A. & S)

(Note) "Mr. J. G. Sanders has reduced Idiocerus provancheri Van D. to ~~synonymy~~ under Idiocerus flavidorsum Amyot and Serville."

- New York A. B. Buchholz (May 6). "Black apple leafhopper has been observed in numerous orchards in Columbia County."
- New Jersey M. D. Leopard (May 10). "Observed newly hatched nymphs on April 30 and second-instar nymphs on May 10 in Passaic County."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- New York C. R. Crosby and assistants report that this insect is, apparently, on the increase in Wayne and Orleans Counties while it is comparatively scarce in Ulster, Orange, and Columbia Counties."
- Indiana H. F. Dietz (May 1). "A trip through the southern end of the State shows the San Jose scale 'coming back strong' unless thorough control measures are carried out. At Mitchell some young trees were killed in a single year."

J. J. Davis (May 15). "In addition to other factors, the wet spring has prevented as thorough spraying with the dormant sprays as was necessary to check the increasing numbers of this scale insect. As a result, this insect now threatens to destroy many trees and possibly many orchards unless checked before the next dormant spray can be applied. We are, therefore, urging a summer strength of lime-sulphur to assist in checking the increase of this scale until the next dormant spray can be applied."

- Illinois W. P. Flint (May 18). "There is a higher percentage of parasitism of this scale than has prevailed for several seasons."
- Missouri A. C. Burrill (May 13). "This insect is much worse than usual in Chariton County, where trees are dying from infestation. It was controlled in all sprayed orchards where spraying was carried on every year. We will try scalicide while the trees are in fruit."

OYSTER-SHELL SCALE (*Lepidosaphes ulmi* L.)

- Massachusetts H. T. Fernald. "Mr. H. A. Mostrom reports that this insect is becoming more serious than the San Jose scale in Essex County."
- New York C. R. Crosby and assistants report that this insect is rather serious in some parts of Columbia, Wyoming, Orange, Onondaga, Wayne, Ulster, and Orleans Counties."
- Indiana J. J. Davis (May 17). "The oyster-shell scale is hatching at LaFayette. We are recommending spraying about ten days or two weeks after the young begin to hatch, using whale-oil or fish-oil soap, 1 pound dissolved in 5 gallons of water to which is added 1 ounce of nicotine-sulphate, spraying thoroughly so as to cover all twigs and parts of the twigs. In very severe infestations we are recommending a second spraying eight days after the first."
- H. F. Dietz (May 23). "The oyster-shell scale has been hatching and the records for the three forms at Indianapolis, as outlined by Glenn, are as follows: Light brown form began hatching on May 1 to 12; apple form, sent from Hammond, began hatching on May 10 to 21; the grape form began hatching on May 20."
- South
Dakota H. C. Severin (April 15). "This insect is one of our most serious fruit-tree pests."

Oregon D. B. Fulton (April 25). "Have been informed by the county agent that this scale insect is unusually abundant in some parts of Union County."

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Connecticut P. Garman (May 22). "Mites are very abundant in one orchard in North Branford, New Haven County. The leaves are turning brown in consequence of this infestation."

New York G. E. Smith (May 13). "Eggs are recorded and an abundance of mites have been found on foliage in Orleans County."

A. B. Buchholz (May 13). "This insect is quite prevalent in some orchards in Columbia County."

Pennsylvania S. W. Frost (May 13). "This red spider does not appear to be as abundant as the eggs indicated a month ago. Present conditions indicate a lighter infestation than last year."

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

Massachusetts H. T. Fernald (April 13). "Mr. H. A. Mostrom reports that this insect seems to be very abundant in Essex County. Three-quarters of the trees in one seacoast town were infested."

New York C. R. Crosby and assistants. "The majority of the psylla eggs had hatched in Columbia County by May 6. They were just beginning to hatch on April 29 in this County. Eggs were first observed hatching on May 5 and had practically completed hatching by May 13 in Genesee County. Eggs were still being laid on April 22 and nymphs were abundant by May 13 in Greene County. Egg laying in full progress on April 22 and practically completed by May 6 in Monroe County. Egg laying was in full sway on April 22 in Niagara County. Heaviest egg laying took place in Orleans County on May 8, and the pest is abundant and very generally destructive. Eggs had not all hatched by May 15 in this County. Eggs began hatching on April 27 in Ulster County while second-stage nymphs were fairly common by May 9. In Wayne County the maximum egg laying was completed by April 29. The eggs started hatching about May 13 in this county."

P. J. Parrott (April 29). "Most orchards in Ontario County show considerable egg laying."

L. F. Strickland (May 13). "Records in one of the experimental pear orchards show that 39 per cent of the total egg laying by the psylla has been what is known as belated oviposition. About 32 per cent of the eggs have hatched in this orchard, which is just beginning to blossom. A small number of the nymphs are still in the second instar. This type of oviposition seems to be more prevalent in Niagara County than in other sections of the State."

PEAR THRIPS (Taeniothrips inconsequans Uzel.)

- New York C. R. Crosby and assistants. "Newly hatched thrips were observed on May 6 in Columbia County. As a whole this insect is causing but little damage so far in New York State."
- Oregon A. L. Lovett (April 20). "Adults first appeared about April 20 in Douglass County. Larvae were first observed on May 3. Throughout the area infested by the thrips a physiological disorder affecting the buds of prune makes it difficult to determine definitely the amount of damage done by adult thrips. In general, the weather conditions have been too cool for thrips activity. This is the first year that this pest has been recorded from Youcolla while at Salem it made its first appearance in 1919. Present indications are that the larvae will do considerable injury to prune and pear."
- California O. E. Bremner (May). "Ten per cent of the prune and pear buds have been killed in Sonoma County by the pear thrips. It is particularly bad along sloughs or where the soil is compact and heavy."

PEACH

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- Georgia O. I. Snapp. "First adults appeared March 4. First eggs noted in the field April 3. First larvae noted April 6 in insectary. First pupae noted in the insectary May 17. Adults will be emerging in orchards by June 1. Very little damage to date. The Mayflower variety is now being harvested and is free from curculio injury. Curculio suppression campaign has been very successful in Georgia peach belt; $2\frac{1}{2}$ bushels of drops in 1921 gave over 13,000 larvae. This year the same quantity of drops gave less than 3,000 larvae."
- West Virginia F. E. Brooks (May 19). "Plum curculio beetles appeared early, but in limited numbers; something less than usual amount of injury is being done to plum and peaches, scarcely any injury to apples."

Tennessee S. Marcovitch (May 15). "The curculio is very numerous and many drops are to be found under peach trees."

. . . BOLLWORM (*Heliothis obsoleta* Fab.)

Georgia O. I. Snapp (May 1). "Very numerous in orchard near Albany where hairy vetch and rye have been planted. Many small peaches have been damaged by larvae"

. . . AMERICAN GRASSHOPPER (*Schistocerca americana* Drury)

Georgia O. I. Snapp (April 28). "These locusts were very numerous during the latter part of April in the Fort Valley section and have done considerable damage by feeding on small peaches."

. . . SAN JOSE SCALE (*Aspidiotus perniciosus* Comst.)

Georgia O. I. Snapp (May 17). "The San Jose scale is, apparently, still increasing in many orchards in central Georgia where the control was unsatisfactory during the past winter."

. . . A FLEA-BEETLE (*Trichaltica scabricula* Cr.)

Tennessee G. G. Ainslie (May 15). "A case of severe injury to the foliage of young peach trees by flea-beetles, which I have determined as above, came to my notice. Injury was confined to 1-year-old trees in rows immediately adjacent to land that had been cleared during the past winter. In the two outermost rows trees had been practically defoliated as fast as the leaves appeared."

CHERRY

. . . PLUM APHID (*Hyettoneura setariae* Thos.)

Indiana H. F. Dietz (May 23). "We are having lots of trouble with plant-lice on plums and cherries. This seems to be an exceptionally favorable year for the development of aphids."

. . . FRUIT-TREE LEAF SYNETA (*Syneta albida* Lec.)

Oregon A. L. Lovett (May 17). "Heavy foliage and blossoms feeding in the Willamette Valley. Young cherries are beginning to show feeding scars. This beetle seems to be more abundant than normally."

PLUM

PLUM APHID (Hysteroneura setariae Thos.)

- Kansas E. G. Kelly (May 6). "This aphid began to appear abundantly about April 2 and caused much alarm among orchardists, and a general spraying followed. Nicotine sulphate was not effective."
- G. A. Dean (May 15). "This aphid is unusually abundant over the eastern half of the State and in many localities is doing considerable injury."

- Missouri A. C. Burrill (May 12). "In parts of Chariton County about 50 per cent of the terminal twigs are infested by this aphid."

PEACH TWIG MOTH (Anarsia lineatella Zell.)

- California O. E. Bremner (May 1), "Damage to young prune trees seems to increase from year to year. This pest is about 50 per cent more abundant than last year in Sonoma County. Lime-sulphur 1-10 effective here when used about ten days before blooming period."

CURRENT AND GOOSEBERRY

IMPORTED CURRENT WORM (Pteronidea ribesi Scop.)

- New York R.C. Palmer (May 13). "Very abundant this season in Chautauqua County. Larvae one-half inch long can now be found, together with an abundance of eggs"
- Pennsylvania Geo. C. Edler (Bureau of Markets). "Observed current worms destroying leaves of bushes at Robertsdale."
- New Jersey F. L. O'Rourke (May 15). "Gooseberries are about 90 per cent defoliated and currants about 50 per cent defoliated at Collingswood, in Camden County. This pest is also reported from small gardens in surrounding towns."
- Maryland J. A. Hyslop (May 7). "Nearly full grown larvae were observed in southern Montgomery County defoliating gooseberry bushes. Currants near by were not infested."
- Nebraska M. H. Swenk (May 15). "There is now present a great abundance of young current worms on gooseberries and currants. Reports of injury by this pest have deluged the office since May 6, although worms were noted stripping plants a day or two before that date."

Kansas G. A. Dean (May 15). "This insect appears to be unusually abundant over the eastern third of the State and is defoliating currants and gooseberries."

GOOSEBERRY FRUITWORM (Zophodia grossulariae Pack.)

Indiana J. J. Davis (May 15). "The gooseberry fruitworm is abundant as usual, and some of them are nearly full grown although a majority are about half grown in the vicinity of LaFayette."

CURRENT BORER (Aegeria tipuliformis Clerck)

New York C. R. Crosby and assistants (May 15). "Report that this insect is found in moderate numbers in Chautauqua County and on one farm in Ulster County they were killing out the Perfection variety of currant."

BLACK GOOSEBERRY BORER (Xylocrius agassizi Lec.)

Oregon A. L. Lovett (May 5). "From 18 to 30 per cent of the older plantings are being damaged by this insect. The larvae are now about two-thirds grown and the damage is very serious."

PECAN

OBSCURE SCALE (Qurysomphalus obscurus Comst.)

Georgia O. I. Snapp (May 15). "One tree killed by this scale, and others near by badly infested in a pecan orchard at Perry. Lime-sulphur solution, 1-6, was used last winter on these trees but did not control this scale."

BELTED CHION (Chion cinctus Drury)

Georgia O. I. Snapp (May 17). "First adults of the season were collected near a pecan orchard on April 1 at Fort Valley. They are very injurious to pecans in this locality."

Phylloxera sp.

Louisiana T. H. Jones (May 10). "Galls are becoming noticeable, especially on seedlings at Baton Rouge. We have also received complaints of damage to the nuts by this insect. This is the first year we have observed galls on the developing nuts."

GRAPE

GRAPE PLUME MOTHS (Gryophilus periscali-dactylus Fitch)

Indiana H. E. Dietz (May 1). "The plume moth on grapes is beginning to show up in moderate numbers at New Albany and Indianapolis."

GRAPE LEAFHOPPER (Erythroneura comes Say)

Pennsylvania (Pennsylvania Crop Protection Circular). "The Pennsylvania Department of Agriculture Laboratory in the Erie grape district is encouraging the use of a trap spray for the grape leafhopper, by using a series of vertical nozzles set at different angles so as to spray two rows on the side at the same time, thus trapping the agile hoppers between two clouds of nicotine."

GRAPE FLEA-BEETLE (Haltica chalybea Ill.)

Correction: In the last number of the Survey Bulletin, page 50, the statement should read "it was abundant and eating grape buds."

West Virginia F. E. Brooks (May 19). "This species is unusually scarce and very little injury has been done."

New York A. B. Buchholz (May 6). "This insect was observed for the first time this season on May 2 in Columbia County."

ROSE CHAFER (Macrodactylus subspinosus Fab.)

Indiana H. E. Dietz (May 23). "A bad case of the rose chafer was reported as infesting grapes at Washington, Ind."

GRAPE LEAF-ROLLER (Desmia funeralis Huebn.)

Louisiana Ed. Foster (May 17). "The larvae of this moth are quite numerous on grapevines. They seem to be of the first generation. Where no spraying or dusting was done last year, the damage from this insect was very considerable."

WHITE ANT (Reticulitermes flavipes Kol.)

Indiana J. J. Davis (May 15). "This insect has been noticed as injuring grapevines by boring into the stalk near the ground at LaFayette. They were also observed to be injuring melons in cold frames at Vincennes."

CALIFORNIA GRAPE ROOTWORM (Bromius obscurus L.)

California O. E. Bremner (May 1). "At Healdsburg, in Sonoma County, 20 per cent of the buds had been eaten by this insect. The vines have been sprayed with Bordeaux and arsenate of lead and some were dusted with arsenic-sulphur dust, 85-15. Both remedies seem to be effective."

GRAPE CURCULIO (Craponius inaequalis Say)

West
Virginia

F. E. Brooks (May 13). "Beetles have appeared very early in this region. At the present time they are unusually abundant on grape foliage and feeding sparingly from the upper surface of the leaves. Grape blossoms not yet open. The crop prospect has been injured seriously by late frosts, and spraying will be necessary in order to save the remaining fruit from infestation by the curculio."

GRAPE TIP-GIRDLER (Ampelogypter ater Lec.)

West
Virginia

F. E. Brooks (May 13). "A number of beetles have been seen on the grapevines and girdled tips are rather more abundant than for several years."

CRANBERRY

BLACKHEAD CRANBERRY WORM (Rhopobota naevana Huebn.)

Wisconsin

S. B. Fracker (May 24). "Mr. O. G. Molder reports that a large percentage of the growers in the central counties are putting on a special flood this week to control this pest. The worms are in the first and second instars and are excessively abundant."

TRUCK - CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- New Jersey D. E. Fink (May 12). "This insect is quite abundant on potato though eggs have not as yet been deposited."
- Maryland J. A. Hyslop (May 25). "Adults are now mating in southern Montgomery County and a few egg masses have been observed."
- Florida H. Mowry (May 9). "This insect is more abundant than usual in Duval County this year. No damage was done by this pest last year."
- Minnesota A. G. Ruggles (May 17). "First potato beetle was seen above ground May 15."
- Louisiana T. H. Jones (May 11). "Beetles from the first generation of larvae noted to be very abundant in a field at Baton Rouge where control experiments are being conducted."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- New Jersey D. E. Fink (May 12). "Throughout the potato-growing section of the southern part of the State this insect is found in abundance and the usual amount of injury is noticeable. Tomato plants that are being set out on this date are severely attacked, except where precautions have been taken to spray the plants before setting out."
- Missouri A. C. Burrill (May 12). "This insect is very abundant on deadly nightshade in orchards about Keytesville."

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

- New Jersey D. E. Fink (May 12). "Lima and string beans show injury from 20 to 30 per cent of the crop. Potato fields show injury from 5 to 45 per cent. The greatest injury to potatoes occurs only in fields on light sandy loam. The unusual dry spring this season has greatly mitigated what started out to be a severe infestation from this pest."

POTATO APHID (Macrosiphum solanifolii Ashm.)

- New Jersey D. E. Fink (May 12). "Winged migrants of this species, as well as of Myzus persicae Sulz., were observed on potatoes. As yet they seem scarce."
- Delaware C. O. Houghton (May 1). "This species has appeared in its usual numbers upon rose bushes at Newark."

Tennessee S. Markovitch (May 15). "I found the pink and green aphid very abundant around Knoxville on early tomatoes last week."

POTATO LEAFHOPPER (Empoasca mali LeB.)

Louisiana T. H. Jones (May 13). "Dr. C. W. Edgerton, station plant pathologist, recently reports seeing fields at Hammond and Baton Rouge badly injured by what seems to be typical hopper-burn. This species of hopper was present on the plants in rather small numbers."

TOMATO WORM (Protoparce sexta Johan.)

Illinois C. C. Compton. "The pupae of the tomato worm are numerous and general in truck-garden sections about Aurora and Chicago. This pest caused considerable loss to growers last season and bids fair to be destructive again this season."

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Louisiana T. H. Jones (May 13). "This bug still continues doing injury in the field, especially to Irish potatoes. Nymphs received on May 4 from Bowie and today from St. Francisville accompanied letters telling of injury."

BRASSY FLEA-BEETLE (Chaetocnema pulicaria Melsh.)

Maryland J. A. Hyslop (May 10). "Flea-beetles are unusually destructive in the eastern part of Montgomery County. Early tomatoes and eggplant are being badly damaged."

Indiana J. J. Davis (May 22). "We had numerous reports of injury during the past week or so to tomato plants by the brassy flea-beetle."

A BLISTER BEETLE (Epicauta lemniscata Fab.)

Florida H. Mowry (May 9). "This blister beetle has been observed for the first time this year where it is damaging about 50 per cent of the plants of Irish potatoes and Okra about Jacksonville."

CABBAGE

CABBAGE APHID (Brevicoryne brassicae L.)

Connecticut M. P. Zappe (May 23). "Aphids are just beginning to show on early cabbages set May 11. They were abundant in the Mt. Carmel section last season."

New Jersey D. E. Fink (May 20). "There seems to be a scarcity of this species on cabbage. I have as yet failed to locate a single specimen, although many cabbage fields have been examined."

HARLEQUIN BUG (Murgantia histrionica Hahn)

Arkansas Dwight Isely (April 29). "Harlequin bug noted at Van Buren April 19 and Fayetteville April 24."

WIREWORMS (Elateridae)

New Jersey D. E. Fink (May 19). "Wireworms were observed attacking lima beans, seed potatoes, and cabbage; they were most numerous in a cabbage field. A half dozen specimens could easily be obtained with each trowel full of soil. They were doing considerable damage to seedling cabbage, and lima bean seeds were entirely ruined where attacked."

STRAWBERRY

STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

New Jersey D. E. Fink (May 12). "Adults have been observed in strawberry fields for the past several weeks. Eggs are now being laid."

Missouri A. C. Burrill (May 4). "The first specimens were observed this year on this date."

Kansas G. A. Dean (May 15). "The strawberry leaf-roller was rather common last year over the entire eastern half of the State, and a few reports are now coming in of it doing some injury to strawberries."

STRAWBERRY WEEVIL (Anthonomus signatus Say)

New York C. R. Crosby and assistants. "By May 6 the weevil had appeared in Ulster County, and control measures will be started May 9."

New Jersey D. E. Fink (May 12). "The weevil is not doing nearly as much damage as in previous seasons."

Minnesota A. G. Ruggles (May 17). "The strawberry weevil seems to be quite abundant this year, particularly in old strawberry patches. Our strawberries started to bloom about May 10."

Arkansas Dwight Isely (April 29). "The strawberry weevil is generally distributed in the vicinity of Fayetteville and Mulberry. Injury in most instances is not of economic importance this year."

EARLY STRAWBERRY SLUG (Empria fragariae Rohwer)

Nebraska M. H. Swenk (April 15). "Reports of injury to strawberry plants by the early strawberry slug began to be received May 6."

SPOTTED CUTWORM (Agrotis c. nigrum L.)

Connecticut D. H. Walden (April 13). "Adults emerged May 21. Some larvae collected feeding on leaves instead of cutting the stems in New Haven County."

A NITIDULID (Heterostomus pulicarius L.)

New York E. P. Felt (May 24). "A small black beetle has been somewhat injurious to recently opened strawberry blossoms in southern Columbia County. The beetles work at the very base of the young blossoms and produce a small blackened area due to their feeding upon the developing anthers and adjacent tissue. Injured blossoms may produce 'nubbins' or be entirely blasted, and in one bed the insect was producing an appreciable amount of injury, though not as serious as that caused by the strawberry weevil. This insect also appears to be present in Saratoga, Niagara, Schoharie, and parts of Albany Counties."

ASPARAGUS

ASPARAGUS BEETLES (Crioceris asparagi L. and C. 12-punctata L.)

Massachusetts H. T. Fernald (May 16). "The first specimens of both species observed on this date at Amherst."

New York C. R. Crosby and assistants. "Adults were first observed in Nassau County on May 10."

Delaware C. O. Houghton (May 10). "The common asparagus beetle is more common than usual at Newark. The first specimen of the 12-spotted beetle was observed on this date. They are much less numerous than the common asparagus beetle."

Maryland J. A. Hyslop (May 1). "The first adult of the season observed today in southeastern Montgomery County." (May 14). "Adults are now swarming in asparagus plantations and stems are literally covered with the eggs. Many half grown larvae are also present. On this date the first specimen of the 12-spotted beetle was observed."

Wisconsin S. B. Fracker (May 16). "Mr. G. C. Christensen reports the common asparagus beetle from Oshkosh, where it is said to be a new enemy of asparagus."

Oregon A. L. Lovett (May 10). "Adults observed and eggs found on May 12. This common asparagus beetle seems to be increasing in the section about Corvallis."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

New Mexico F. H. Chittenden (Monthly Letter Bureau of Entomology No. 96). "Mr. J. E. Graf, reports that in the Estancia Valley in New Mexico hibernating beetles were found several miles from any previous bean plantings and high in the hills in the partially wooded sections of the Valley. It is apparent that hibernating in woodlands is characteristic of this beetle. Evidently a certain amount of woodland is necessary to provide suitable hibernating quarters and the beetles have failed to hibernate successfully when extending their range eastward from the Rocky Mountain foothills. In the East, which is comparatively heavily wooded, no limitation of this nature will prevail and the beetle will probably be able to extend its range over the entire territory east of the Mississippi River."

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

Arkansas Dwight Isaly (April 27). "The first record of this beetle made today. Leaves stripped locally in a few instances." (May 22). "Bean leaf beetle is causing local injury to string beans in the vicinity of Fayetteville, Siloam Springs, and Van Buren."

PEAS

PEA APHID (Illinoia pisi Kalt.)

New Jersey D. E. Fink (May 12). "Peas unusually free from attack of this species at the present time." (May 20). "The pea aphid is becoming noticeable. It is possible that severe injury may not occur before the crop is ready to be harvested, since in most fields the pods are already formed."

Delaware J. F. Adams (May). "Serious injury by this species is reported from several localities in southern Delaware."

California Victor Duran (May 5). "On April 27 in the San Joaquin Valley, vines were found to be infested almost solely by alate females, there being comparatively few young. By May 5 the young were more abundant and many apterous females had developed. In some fields the infestation would average about 10 or 15 alate adults to a foot of row, while in one field there were fully 300 in this space. The fields are scattered and small, the average acreage for each grower being about 15 acres. Much alfalfa is grown in the locality, and the greater part of this was cut between April 15 and 30. Aphids in all stages were found on alfalfa, and in view of this fact, the abundance of alate individuals on the peas, the comparatively small number of young seen on the vines, and the healthy conditions of the plants supporting large numbers of aphids,

it seems evident that a migration of this insect from alfalfa to peas had just taken place. In this region there is a total acreage in peas of approximately 1,000 acres."

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Ohio T. H. Parks (May 20). "Quite troublesome on melons in the southern and central counties. The gypsum-arsenate of lime mixture (one part of arsenate of lime to 20 parts of gypsum by weight) is giving good results where applied at frequent intervals to repel the beetles."
- Indiana J. J. Davis (May 15). "The striped cucumber beetle is common as usual in the melon section of the southwestern part of Indiana. They first made their appearance at Vincennes about the first of May. From a general survey at Decker near Vincennes, apparently the striped beetles are not as abundant near the river where the overflow covered the ground, but farther back from the river they are in conspicuous numbers. It seems that the overflow destroyed many of the beetles hibernating along the river."
- Missouri L. Haseman (May 10). "This beetle is worse than usual for this season of the year and has already been reported as ruining early melon crops in Boone County."
- Arkansas Dwight Isley (May 22). "The striped cucumber beetle is causing severe injury to canteloupes in the vicinity of Van Buren. Percentage of hills killed in commercial fields ranges from 20 to 100."
- Louisiana T. H. Jones (May 11). "Mr. C. E. Smith of the Bureau of Entomology reported the first finding of beetles in field of Baton Rouge today."
- New Mexico R. Middlebrook (April 7). "This beetle appeared ten days earlier than usual this year, first being observed on March 15, in the Mesilla Valley."

FLORIDA FLOWER THRIPS (Frankliniella bispinosus projectus Watson)

- Florida K. C. Moore (May 10). "Melons and canteloupes did not set more than one-quarter of a crop in many localities throughout Marion County on account of thrips."

COTTON APHID (Aphis gossypii Glov.)

- Kansas G. A. Dean (May 15). "This insect is just beginning to appear around Manhattan and undoubtedly will soon appear over the entire State."

ONION

ONION THRIPS (Thrips tabaci Lind.)

Louisiana T. H. Jones (May 4). "Judging from recent reports onion thrips caused considerable damage in southern Louisiana this year. Badly injured plants were sent in from Bowie on May 1, and what is without doubt this insect was reported to be "playing havoc" with the onion crop in Terre Bonne Parish. District extension agent for southern Louisiana also reports that severe injury was general this spring over southern Louisiana."

WHEAT WIREWORM (Agriotes mancus Say)

New York C. R. Crosby (May 16). "Wireworms are reported as attacking onions and lettuce at Elba."

HORSERADISH

HORSERADISH FLEA-BEETLE (Phyllotreta armoraciae Koch)

Massachu- H. T. Fernald (May 20). "This insect was observed at Amherst
setts this year. It is the first record that I know of for
Massachusetts."

SPINACH

GREEN PEACH APHID (Myzus persicae Sulz.)

California R. E. Campbell (May 1). "The entire acreage grown on the Pala Indian Reservation in San Diego County was infested but spraying was begun in time and most of the damage was avoided. Predators were negligible in this outbreak but Empusa aphidis was destroying from 25 to 50 per cent of the aphids in some fields."

S O U T H E R N F I E L D - C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

Cotton Belt. B. R. Coad (May 24). "Reports received from Sumter and other points in South Carolina, Sherman, Tex., southeastern Oklahoma, Georgia, and Mississippi indicate the presence of an unusually large number of weevils on small cotton for this time of year. This is the first season that weevils have been reported in large numbers this early as far north as Clarksdale in the Mississippi Delta. In the vicinity of Tallulah, La., examinations show the weevils to be more numerous on small cotton at this time than in any previous year of which we have record and far more numerous than any average years."

SUGAR-CANE

SUGAR-CANE BEETLE (Euotheola rugiceps Lec.)

Louisiana T. E. Holloway (May 23). "A search in rice, corn, and sugar-cane fields at various points in southern Louisiana has been made for the sugar-cane beetle but very few of the beetles have been found. They are doing some damage near Franklin but, in general, they seem to be scarce."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana T. E. Holloway (May 23). "The sugar cane moth borer has appeared very early this spring after a mild winter. It is about a month earlier than usual, a second-instar larva having been found on April 18. This corresponds with conditions last year when borers showed up in the middle of April, the winter of 1920-21 not being at all severe."

ANOMALA (Anomala orientalis Waterh.)

Connecticut W. E. Britton (May 24). "Two or three specimens of this beetle were first collected on grass and weeds among pines in a nursery at New Haven in July, 1920, by Messrs. Walden and Zappe. The beetle was again taken in 1921 in the same place but only a few specimens. I have just been able to get the species determined. It is said to injure sugar-cane in Hawaii and may prove to be a serious pest. The beetles were identified at the British Museum."

F O R R E S T A N D S H A D E - T R E E I N S E C T S

PERIODICAL CICADA (Tibicina septendecim L.)

- Wisconsin S. B. Fracker. "A nymph possibly of the 1922 brood of the periodical cicada was collected at Leigh, about May 1. This is over 100 miles from the known distribution of this brood. Specimen sent to Bureau of Entomology for verification." (Mr. W. L. McAtee, U. S. Biological Survey, determined the nymph as Cicada septendecim L. but probably of a later brood.)
- Ohio H. A. Gossard (May 26). "A considerable tract of park forest with trees of all sizes and much undergrowth was dusted by aeroplane this week, the work being done cooperatively by the Experiment Station, the city park department of Cleveland and McCook Aviation Field. The woods were infested with canker-worms. Under very difficult conditions the work was successfully done and the distribution of the poison was excellent on woods and undergrowth. Notwithstanding heavy rains, the killing effect on the caterpillars has been excellent. This test has satisfied all entomologists who saw the work and the results that dusting by aeroplane is a very practical method of treating forest areas and that only the details of practice yet remain to be learned."

MAPLE

(Drepanaphis acerifoliae Thom.)

- Missouri A. C. Burrill (May 3). "This insect is much more abundant than usual, Most of the smaller leaves have from one to ten winged individuals."

(Chaitophorus coracinus Koch)

- New York E. P. Felt (April 28). "Received today from eastern Long Island sycamore maple buds with numerous small aphids, presumably the aphids of the sycamore maple."

ELM

AMERICAN ELM SCALE (Chionaspis americana John.)

- South
Dakota H. C. Severin (April 22). "General over the eastern half of the State. This is a serious pest of elm in South Dakota."
- Nebraska M. H. Swenk (May 15). "During the period of April 15 to May 15, reports of injury to elm trees by the white elm scale were repeatedly received."

Kansas G. A. Dean (May 15). "During the last few weeks several specimens of elm twigs have reached this department badly infested with the elm scale. During the last two or three years conditions have been very favorable for this elm scale to increase. Usually it has been fairly well controlled by parasites, but the specimens reaching me this spring show scarcely any parasitism."

EUROPEAN ELM SCALE (Gossyparia spuria Modeer)

New York G. W. Herrick (April 6). "Males have already formed their cocoons and have moulted to the third instar. Females are moulting also at Ithaca."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York J. B. Palmer (April 18). "Young ornamental trees have been killed at Binghamton."

ELM CASE-BEARER (Coleophora limosipennella Dup.)

Connecticut G. M. Finley (May 24). "Almost every leaf on one elm tree at Hampden had one or more of the cases of this insect."

ELM LEAF-BEETLE (Galerucella luteola Muell.)

Oregon A. L. Lovett (May 18). "Adults first observed in a field in the Willamette Valley on May 9. At the present date they are swarming into the trees."

ELM BORER (Saperda tridentata Oliv.)

Nebraska M. H. Swenk (May 15). "Reports of injury to elm trees by the common elm borer were repeatedly received during the past month."

South
Dakota H. C. Severin (April 15). "General over the eastern half of the State, this being one of our most serious elm pests."

oak

(Andricus coronus Beut.)

South Carolina

and E. P. Felt (May 17). "Referring to the record in the last
Tennessee Insect Pest Survey Bulletin regarding the abundance of
Andricus coronus Beut., I received specimens early last
month from Clemson College, S. C., and Chattanooga, Tenn."

(Goes tessellatus Hald.)

West

Virginia F. E. Brooks (May 19). "Numerous small white-oak saplings have been observed recently that were injured seriously by the larvae of this species boring in the trunks at the surface of the ground."

(Neoclytus conjunctus Lec.)

Oregon A. L. Lovett (April 25). "This beetle is much more numerous than has been observed in recent years about Corvallis. The adult beetles are now mating."

PINE

PINE TUBE MOTH (Eulia pinatubana Kear.)

New Jersey F. L. O'Rourke (April). "This insect was in the larval and pupal stages when observed early this spring. It evidently occasioned considerable damage last year, as from 30 to 50 per cent of the foliage was removed from some trees in Camden and Burlington Counties."

JUNIPER

JUNIPER WEBWORM (Ypsolophus marginellus Fab.)

Connecticut W. E. Britton (May 24). "The larvae of this insect webbed up many plants, living in the webs through the winter. One adult has emerged so far. Many of the plants are wholly brown, others partially so. This insect was very destructive last year at Hartford."

INSECTS OF GREENHOUSE AND ORNAMENTAL PLANT

ORCHIDS

CATTLEYA FLY (Isosoma orchidearum Westw.)

New York E. P. Felt (May 24). "Mr. R. E. Horsey reports that this insect has been present for several years in the Highland Park greenhouses at Rochester, and during the past winter and spring there was a bad outbreak."

PHLOX

MARCH FLIES (Bibio albinennis Say)

New York C. R. Crosby (May 1). "This insect was very abundant at Minerva, where delphinium and phlox were grown."

CROTON

GREENHOUSE THRIPS (Heliothrips haemorrhoidalis Bouche)

Louisiana Ed. Foster (May 17). "First instance in the writer's experience of this insect attacking crotons came under observation today. The infestation was comparatively heavy. Growers of crotons about New Orleans have been little troubled with insects of a serious character."

GLADIOLUS

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

Louisiana Ed. Foster (May 17). "Some damage by the adults to the young shoots of gladioli were noted by the writer a couple of years ago. For the past couple of years this insect has not been plentiful in New Orleans. There is a decided increase in their numbers this year."

CANNA

LESSER CANNA LEAF-ROLLER (Nymphula cannalis Quaint.)

Florida C. A. Weigel (May 18). "Leaf-rollers have been reported as doing serious damage to cannas at Linn Haven. Over 600 worms were collected from one canna bed."

Louisiana Ed. Foster (May 17). "Damage to both thick and thin leaved varieties of cannas is at present very considerable. Last year the crop was practically a failure in this section, due entirely to this insect. Three plantings were made in some of the municipal beds in New Orleans and in many others the plants were cut to the crown a couple of times."

BOXWOOD

BOX PSYL (Evilla buxi L.)

New Jersey Herdman West (May 16). "A number of bushes were found to be lightly infested at Elberon in Monmouth County."

BOXWOOD LEAF-MINER (Monarthropalpus buxi Labou)

New York J. B. Palmer (April 25). "Reports of severe infestation of boxwood hedges have been received from Long Island."

New Jersey Herdman West (May 16). "Some large boxwood trees quite heavily infested at Elberon, in Monmouth County."

VIBURNUM

SNOWBALL APHID (Anuraphis viburnicola Gillette)

Nebraska M. H. Swenk (May 15). "Snowball bushes everywhere are reported to be infested by an abundance of this aphid. Reports began to come in May 5 and are still being received. This is the heaviest outbreak of this aphid that we have had in the State for a number of years."

FUSCHIA

COTTON RED SPIDER (Tetranychus telarius L.)

New York C. R. Crosby (April 29). "Reports have been received of infestation of these plants in a greenhouse at Kingston."

GREENHOUSE WHITE FLY (Trialeurodes vaporariorum Westw.)

New York C. R. Crosby (April 29). "Greenhouse plants are reported as being badly infested at Kingston."

ALTHEA

COTTON APHID (Aphis gossypii Glov.)

Indiana H. F. Dietz (May 23). "We are having lots of trouble on rose of Sharon."

ACACIA.

COTTONY CUSHION SCALE (Icerva purchasi Mask.)

New York J. B. Foster (May 17). "Plants in greenhouse at Ithica seriously infested."

LILAC

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- New York C. R. Crosby and assistants report this insect as quite abundant at Syracuse, and in Orleans County.
- Delaware C. O. Houghton (May 7). "Eggs of this species are now hatching here. The accumulative excess temperature since January 1 is approximately 325 degrees."
- Indiana H. F. Dietz (May 1). "The light brown oyster-shell scale, the two-brooded form which attacks cottonwood but not apple, was hatching at Indianapolis today on lilac, red osier, and American ash. This is four days later than in 1921 and 18 days earlier than in 1920."
- Indiana J. J. Davis (April 15). "The first oyster-shell scales were observed to be hatching on dogwood and lilac at Lafayette yesterday."

MAGNOLIA

COTTONY CUSHION SCALE (Icerva purchasi Mask.)

- Louisiana T. H. Jones. "Specimen of this scale was sent in for determination from Covington. It is of interest to note that recent efforts to secure the Vedalia beetles in Baton Rouge, New Orleans, for purpose of making shipments to other sections infested by the scale have met with little success, neither the scales nor the ladybird beetles have so far been located in any considerable numbers. I know of no reason for this, other than the effectiveness of the ladybird beetles."

(Pseudococcus virgatus Ckll.)

- Louisiana Ed. Foster (May 17). "This scale is at present quite numerous on both shade and cultivated magnolias. Another coccid, Toumevella sp. is also very prevalent. The coccinellid, Hyperaspis signatus Var. binotata Say., is again proving an effective check to both species."

ROSE

ROSE APHID (Macrosiphum rosae L.)

- Georgia O. I. Snapp (May 17). "Aphids appear to be unusually abundant on roses and ornamental shrubs at Fort Valley. Nicotine sulphate has been used successfully."
- Indiana H. F. Dietz (May 23). "We are having lots of trouble with plant lice on roses this spring."

California Roy E. Campbell (May 8). "Rose aphid has been worse, affecting more plants and more buds and stems per plant than I have ever observed before. In Los Angeles County I have observed very few bushes not infested to some extent."

ROSE SLUG (Caliroa aethiops Fab.)

Kansas G. A. Dean (May 15). "This slug is now defoliating roses in the vicinity of Manhattan. Last year it was very bad over the entire eastern third of the State."

ROSE CURCULIO (Rhynchites bicolor Fab.)

Colorado W. D. Pierce (May 12). "I found this weevil to appear in early June last year at Denver."

California W. D. Pierce (May 12). "The rose weevil has appeared in abundance, attacking the buds of many cultivated varieties of rose in San Mateo. Eggs were observed on this date. This is not only the earliest record I have ever noted, but I believe the first in San Mateo County."

HOUSE HOLD INSECTS

WHITE ANT (Reticulitermes flavipes Kol. and virginicus Banks)

Indiana

H. F. Dietz (May 1). "During the last of March and the first of April termites were observed doing considerable damage in Indianapolis. The species involved, where specimens were examined, was Reticulitermes virginicus Banks."

(May 23). "A serious infestation of termites in a store building in Indianapolis was investigated. The floor was laid directly on cinders over the ground and the baseboards around the edge of the rooms were also in direct contact with the ground. In this case the species involved was Reticulitermes flavipes Kol."

Missouri

A. C. Burrill (May 4). "A serious infestation by white ants has been investigated in DeKalb County. Practically 10 per cent of all the woodwork on the farm was destroyed, the insects even attacking grain in wooden bins. Cement bases have been placed under some of the buildings but the ants make tunnels on the surface of the cement and enter the woodwork."

ROACHES (Periplaneta americana L. and Blattella germanica L.)

Georgia

O. I. Snapp (May 17). "Roaches are very troublesome in many houses and hotels in Fort Valley. Great quantities of groceries have been destroyed. Sodium flourid is being used, but even with this it is a difficult problem to rid the properties of these insects."

SILVERFISH (Lepisma saccharina L.)

New York

J. B. Palmer (April 8). "These insects were discovered in numbers in an attic in Batavia."

South
Dakota

H. C. Severin (April 22). "This insect is general in towns over eastern South Dakota and is becoming more serious each year."

I N S E C T S A T T A C K I N G D O M E S T I C A N I M A L S

CATTLE

HORN FLY (Haematobia irritans L.)

- Kansas E. G. Kelly (May 8). "These insects were observed over eastern Kansas. On May 10 they were first observed at Manhattan."
- Louisiana T. H. Jones (April 29). "The horn fly is now quite abundant."

STABLE FLY (Stomoxys calcitrans L.)

- Texas F. C. Bishopp (May 22). "Stable flies have been quite annoying to live stock in the vicinity of Dallas during the past two weeks. They are rather more abundant than usual at this season, some animals being infested with from 50 to 100 flies during favorable fly periods."

SCREW WORM (Chrysomya macellaria Fab.)

- Texas F. C. Bishopp (May 22). "Although adults of this pest continued abundant in southwestern Texas screw-worm cases were not especially numerous during early May but have increased considerably since the middle of the month. At El Paso and Alpine the adults were comparatively scarce on May 11. Toward the end of the month the species became very abundant in the vicinity of Dallas."

BLACK BLOW-FLY (Phormia regina Meig.)

- Texas F. C. Bishopp (May 22). "This species had practically disappeared at Uvalde on May 13 but at Dallas it has been very abundant up to date."

HORSEFLIES (Tabanus pumilus Macq.)

- Louisiana T. H. Jones (April 25). "Mr. W. G. Bradley, assistant entomologist of the experiment station, reports Tabanus as causing considerable annoyance to stock near Amite River. Tabanus pumilus was the most numerous of the species observed."

CATTLE SCAB (Psoroptes communis Furst.)

- California (Weekly News Letter, California Dept. Agr.). "The introduction of cattle scab in Mono County, reported in the last number of the Survey Bulletin, has probably resulted in the establishment of this pest in the State. A few cattle in the Antelope Valley have been found to be affected with scab. Vats are now being constructed for the purpose of dipping infested cattle. Careful survey indicates that the establishment of an effective quarantine and consistent dipping will prevent further spread of the scab in the State."

POULTRY

TURKEY GNAT (Simulium meridionale Riley)

- Nebraska M. H. Swenk (May 15). "On May 10 a serious report of the killing of young chickens and driving to cover all mature fowls by the turkey gnat was reported from a farm along the Blue River in York County."
- Missouri A. C. Burrill (May 24). "This insect is killing both young and old chickens in Troy and Bowling Green."

INSECTS ATTACKING STORED PRODUCTS

BEAN WEEVIL (Mylabris obtectus Say)

- Massachusetts H. T. Fernald (May). "Many more complaints than usual have been received during May of beans infested by this weevil."
- New York C. R. Crosby and assistants. "Reports of infestations were received during April and up to the middle of May from northern New York."
- Minnesota A. G. Ruggles (May 17). "All through the spring samples of beans were sent in infested with the bean weevil. The last year or two this insect seems to have been on the increase. We have never had as many inquiries concerning this pest before."
- South
Dakota H. C. Severin (April 25). "Many letters and specimens were received during the winter and spring."

GRANARY WEEVIL (Calendra spp.)

- Indiana J. J. Davis (May 15). "Within the past month we have received two reports of bad infestations of the granary weevil in houses in different sections of the State."
- Kansas G. A. Dean (May 15). "Stored grain insects, particularly the two grain weevils and the Angoumois grain moth, are unusually abundant. During the last two years the stored grain insects have done a very large amount of damage."

CADELLE (Tenebroides mauritanicus L.)

- Maryland E. A. Back (Monthly Letter, Bureau of Entomology, April). "Dr. Back and Mr. Cotton went to Baltimore on April 25 to investigate an unusual outbreak of Tenebroides mauritanicus L."